RIGGING AND TUNING FUNDAMENTALS:

PART 1

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PHOTOS: ALEX IRWIN – SPORTOGRAPHY.TV AND JOHN HUMPHRIES

THIS YEAR I COACHED A LOVELY LADY ON ONE OF MY OVERSEAS CLINICS. DURING THE INITIAL DISCUSSION ABOUT WHAT SHE COULD EXPECT FROM THE COURSE I MENTIONED THAT THE VERY FIRST THING WE WOULD LOOK AT WOULD BE THE BASICS OF KIT TUNING – SO THAT WE WOULD BE ABLE TO GET THE MOST FROM EVERY SESSION. She seemed a little disappointed and said thanks but she would miss that bit out. *"I never touch the kit,"* she said, *"I only sail on holiday where everything is already set up."* I had to take action. Ruthlessly switching into used-car-salesman-mode I just about managed to convince her to attend the tuning session and, thankfully, by the middle of the week, she was really into it. So much so that after sorting her own kit she could be seen snooping around other people's kit to check that their setups were ok. Success! And if she can get into it anyone can.

Disclaimer…if you are looking for information about varied setups to suit waves, freestyle, extremes of wind, downwind slalom, upwind formula racing etc. then that's not what is happening here. If, however, you are up for getting started with the general basics of freeride board and rig setup for planing (with rotational sails) – even though you have previously not really been too bothered about it – then you are cordially invited to read on…

I am going to look at:

- Downhaul
- Outhaul
- Boom height
- Mast foot position

Part 2 of this article will cover:

- Harness lines
- Footstraps
- Fins

Who is in charge, you or the kit?

Back in September, during the wonderful wind of Storm Ali, I rigged a new 4.7. I pulled on a standard amount of downhaul yet I had the feeling that I perhaps should have opened the extension up 1-click more (to get even more downhaul on) as the wind was increasing. I ignored my instinct in case the wind dropped back yet, from the moment I hooked in and sped away from the shore, I realised just how windy it really was. There was simply too much power at the top and the leech was not opening up enough – which was pulling me into an upright body position – which was making me sheet out – which was making the board bounce. Everything about it felt bad and all the bad stuff could be traced back to the source: not enough downhaul. After just one reach I landed on another shore and struggled in the buffeting winds to remove the rig and re-tune my kit without it blowing away. Back out on the water the sail felt perfect and I relaxed into a great session where the balanced kit worked exactly as it should do.

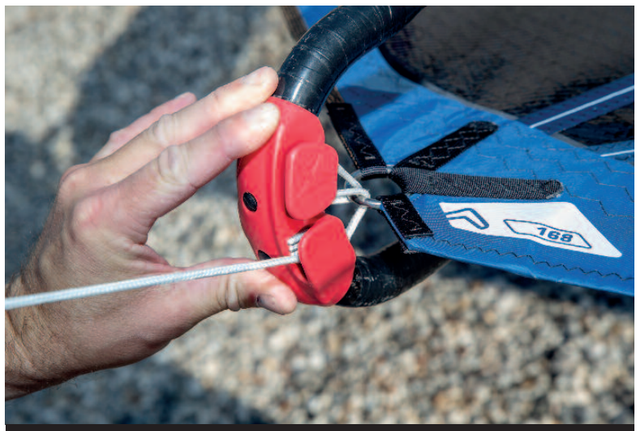
Has this ever been you: being pulled onto your toes with your bum sticking out for ballast, a bouncing board, tense body, teeth gritted Wallace-and-Grommit-style and worried that your skill set has fallen apart at the seams? Well, there's actually a reasonable chance that those kind of experiences were down to incorrect setup of kit and not lack of talent. So keep calm and carry on tuning…

Below: Storm Ali: well-tuned kit can facilitate awesome sessions

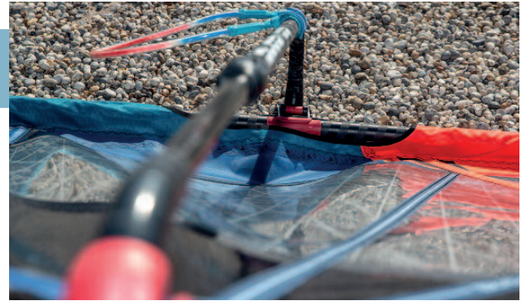
A place to start

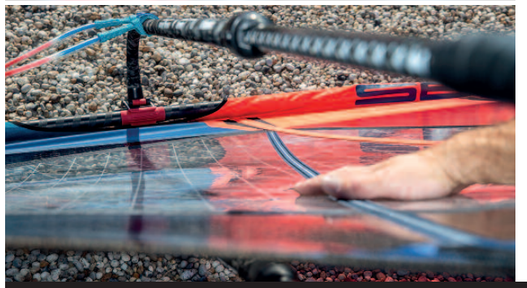
Using the printed settings on the sail or sail bag is a good place to start but the settings shown for mast extensions and boom lengths may need adjusting slightly especially if you are using a melting pot of different ages and brands of masts, sails, booms and extensions. Once you have found the perfect setting for your extension and boom on a particular sail why not write this in permanent marker on the side of your plastic box that holds all your mastfeet, extensions, tools etc. in your vehicle. This will help you to rig like a ninja and enjoy more time on the water.

The guide below is, of course, designed to help you to rig well. However, if you want to see what a badly rigged sail looks like then by all means go ahead and try it. I often work with students who are not too sure what a well-rigged or badly-rigged sail looks like. So I gather them around a rig and let a load of downhaul off and pull on way too much outhaul. They can then see first-hand how the main power source of the sail (radiating from the boom cutout) is saggy and ineffective, the battens are too far forward of the mast to rotate and the leech is so flat and tight that the exhaust is effectively choked. Once they have imagined the nightmare of windsurfing using this sail I can work from there by correctly tuning the sail bit by bit to get everything perfect. Seeing both ends of the scale can be an effective learning tool.

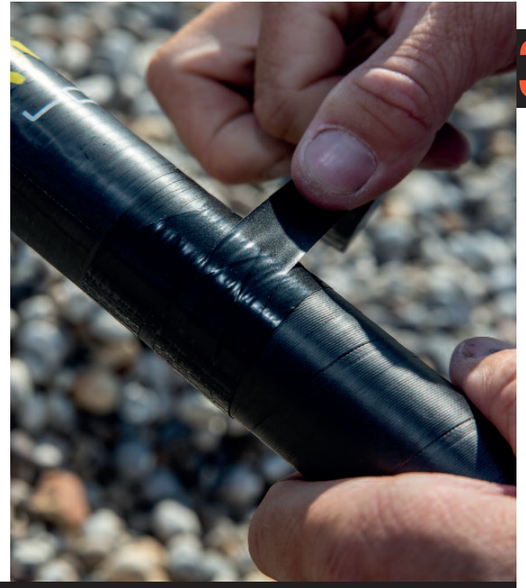


Above: Outhauling should be done carefully. If you feel the need to put a foot on the boom-end when outhauling then you either need more downhaul or maybe your mast is incompatible/too stiff





The upper setup uses hardly any downhaul and way too much outhaul. The lower setup, in contrast, is tuned correctly



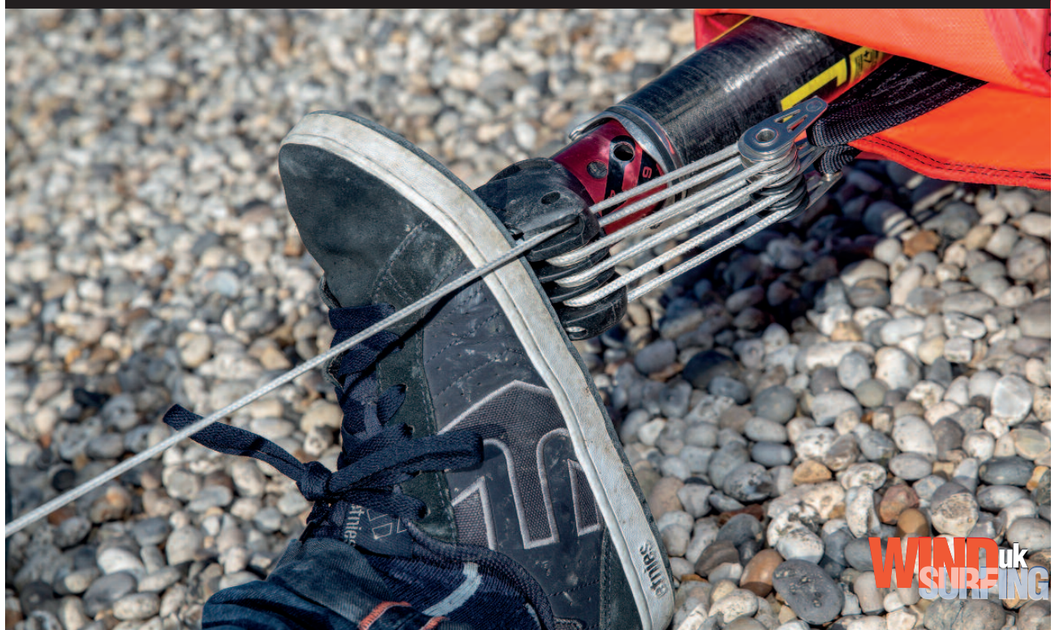
Above: Taping mast sections tightly can prevent separation inside the luff tube during rigging

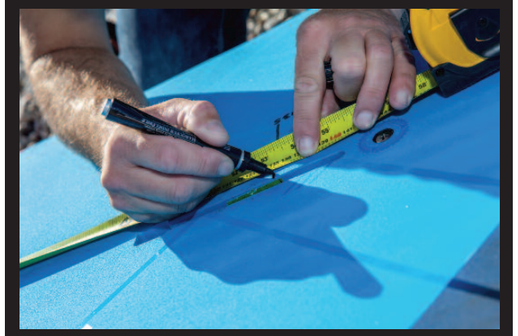
Downhaul

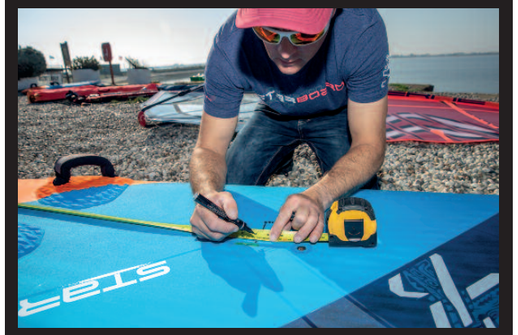
Set the extension as per the info on the sail. If, for example, it states a luff length of 448cm then it will typically need the extension to be set at 18cm, using a 430cm mast. If you are using an adjustable head sail with no extension (just a non-extendable mast base) then, say your luff is 415, you would typically use a 430 mast with the strap set at 15cm. Insert the mast half-way up the sleeve and work the sail down the mast from there. Avoid ramming the mast into the luff tube as care needs to be taken when inserting a straight mast into the sweeping curve of a luff tube. Consider taping the mast sections together using electrical tape in case of separation. Some modern masts are so well-engineered that the two sections can be pushed apart by trapped air and if this happens out of sight inside the luff tube then the mast could break when downhaul is applied. I am assuming that you have chosen a compatible mast for your sail as mast types are not being covered here.

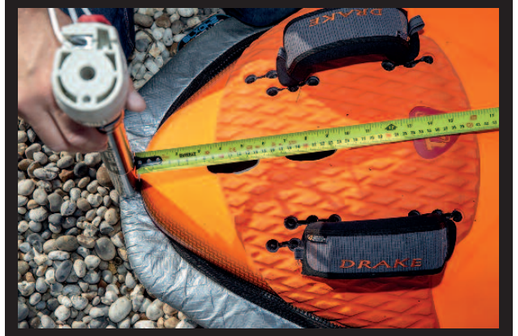
Thread the downhaul. 2.0 metres of 4mm Dyneema core rope are needed (I use the awesome, windsurf-specific Marlow Formuline 3.8mm which is 12 strand Dyneema SK78 with no outer sheath). To avoid chafing and friction under tension, learn how to rig it in such a way that the lines stay uncrossed. Use a pulley hook on sails with a tack cringle (although most modern sails have a tack pulley fitted). Pull it on until the leech goes floppy down to the 3rd or 4th batten. The other thing you are looking for when downhauling is for the end of the batten above the boom to be drawn into a position where it is sitting about half way across diameter of the mast (downhauling a little more if very windy). Tidy the downhaul away by tying it off or, if you have one, coiling it into the mesh pocket on the inside of the bottom of the luff tube. Having a load of rope sloshing all over the board when you're sailing is an unwanted distraction.

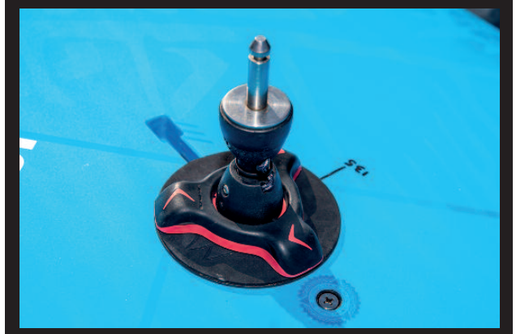
Below: Always thread your downhaul in such a way that minimizes any friction or twisting











Marking your mast track is the first step to standardising your tuning and understanding the relationship between mastfoot, boom height and outhaul

Above: Once an initial setup of kit is done you just need to position your mastfoot on the mark then set the boom off the tail of the board to get the perfect boom height every time

Boom length

Adjust the boom as per the printed guide settings on the sail (or just estimate it for now) and connect it to the mast roughly at your correct height (boom clamp rope length 0.5m), thread the outhaul (length 1.0m) and tension it just a little to take up the slack. We are not finished yet with boom height or outhaul!

Mast foot, boom height and outhaul

Position your mast foot on the board at 130, 135 or 140 and connect your rig. These numbers are measurements in centimetres from the tail of the board and, by working with a known measurement from the tail we are able to begin to standardise our setup. Some specialist, longer and/or older boards may not suit these settings but, as a rule of thumb for a modern freeride board, they work pretty well.

- 130: boards of 110 litres or less
- 135: boards of 110-170 litres
- 140: boards of 170 litres or more (especially those with a daggerboard)

Where do most people actually put their mastfoot? 'In the middle of the mast track' of course. Well this might work out ok but different ages and types of board from different manufacturers all have slight differences in the length and position of the mast track. So putting it in the middle on every board you use may actually mean that you are unknowingly putting it in a random position each time you go windsurfing on different kit. Some modern boards have measurements printed next to the mast tracks – but some don't – and some are a bit out! So be a geek and get your tape measure out. If it's your own board then put a small line or dot on your board at the standard measurement and position it so that you can still see it when the mastfoot is in the track. If it's a hire board (and you don't fancy asking them to ink-up all their boards) then measure – just once – the one you will be using the most and make a mental note of where on the mast track the mark comes to. It could be, for example, 'just a little forward of the middle of the mast track' or 'about 4cm from the back of the mast track' which should be pretty easy to remember.

So let's say you have put the mastfoot on the 135 mark of your 130-litre board. Now you can connect your rig, put your board on a mat, pad or board bag and carefully stand on it next to the mast (no fin yet). Then adjust the boom height to where you prefer it. This should be from just under shoulder height on average (going a bit lower in very strong winds for control and a bit higher in very light winds for power).

Keeping board and rig connected, step off and lay the rig over the tail of the board to discover where the boom is positioned relative to it (as shown in the photo above right).

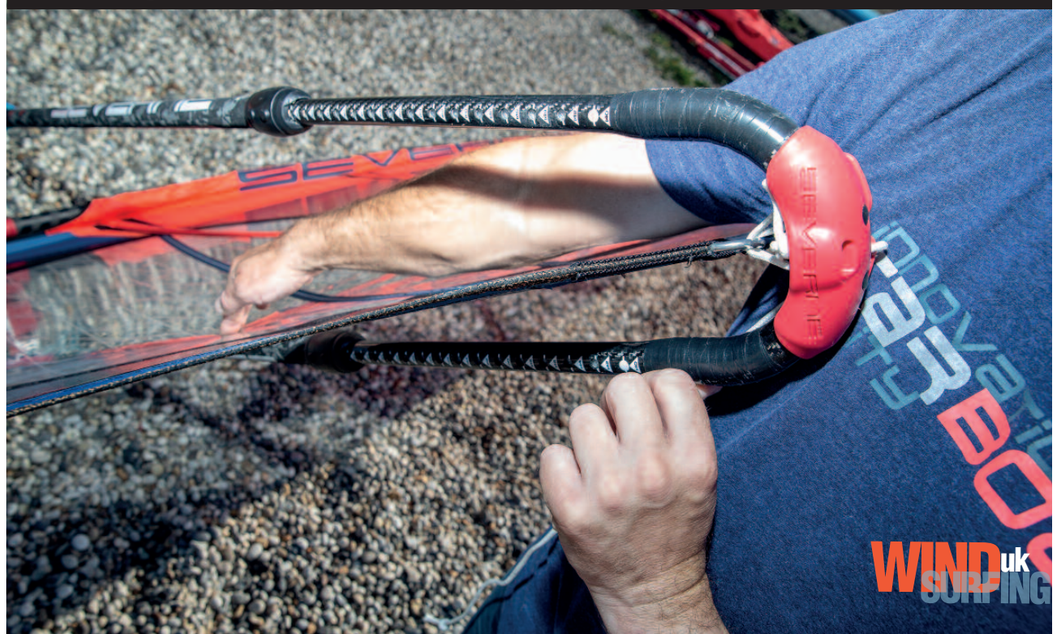
Your boom may, for example, 'line up with the tail of the board' or be 'a few centimetres off the tail' or '1 centimetre inboard from the tail'. Wherever it is will become your standard setting and you will use this to get started with tuning. What I mean is that, from now on in normal conditions, you can set your perfect boom height – not by ever measuring it again to your shoulder but – by simply setting your mastfoot on the mark, laying the boom over the tail and adjusting the boom to your standard setting. This could save you time and prevent you running into the sort of trouble you can encounter when setting off from the beach to discover that the boom height is not right.

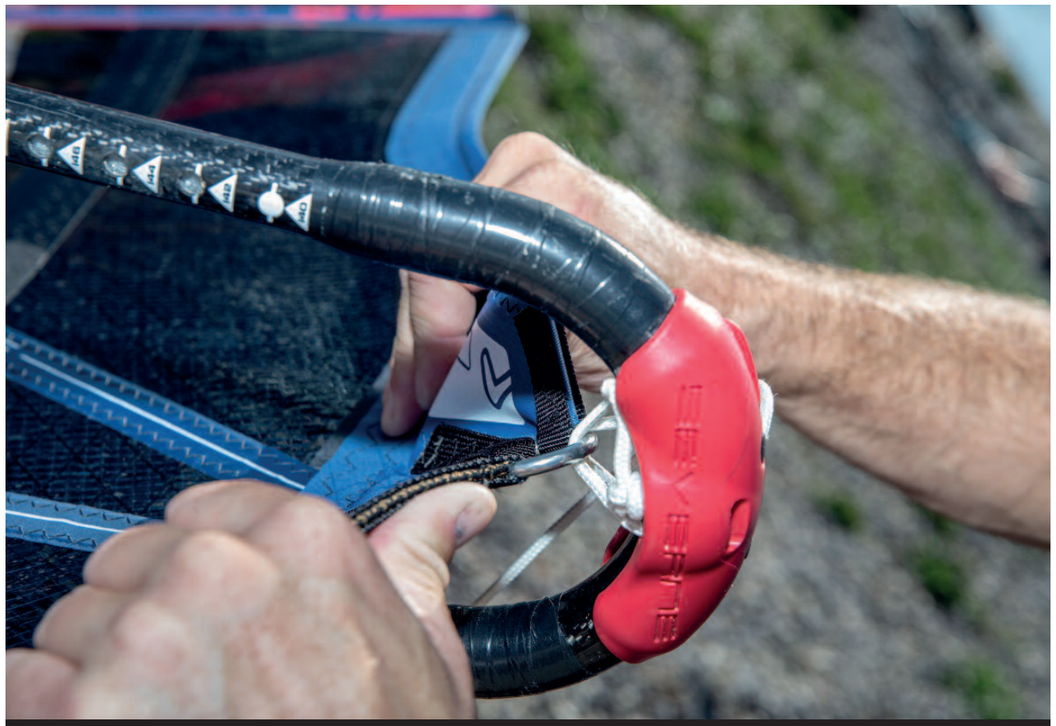
The next step is to remove the rig from the board and set your outhaul. Just outhaul a little bit (or a little more if very windy) and do the finger push test. This may need a slight boom length adjustment but do not touch your boom height as this is already set. To do the finger test stand at the back end of the boom with the mast on the ground and the clew tucked into your armpit. Extend a straight arm onto the sail and push down with two fingers. You should just be able to press the sail onto the boom. On windier days with slightly more outhaul on (1-2cm) you might need 3 fingers to push the sail onto the boom in the same way.

Revenge of the outhaul

The classic occurrence in a hire centre is this. Tall lady grabs rig from regular height guy who is just coming in, says thanks, knocks the boom height up from middle to top of cutout, goes sailing. Well the bad news is that she's going to have a very loose sail which will significantly affect control and stability. Why? Well, let's assume that the guy had his outhaul set perfectly when his boom was in the middle of the cutout (to suit his regular stature). When the lady, being taller, knocks the boom up and re-clamps it she effectively lets off loads of outhaul tension. This is because the front end of the boom sliding up the mast pulls the back end of the boom slightly towards the mast.

Below: Pressing with two fingers from this position is a good way to set your outhaul tension





Above: Casually adjusting your boom height can throw your outhaul setting out, so any boom height change must be matched by adjusting the outhaul

A way of visualizing this is to imagine a plank leaning against a wall. If you take the plank and push it higher up the wall then the lower end of the plank will move towards the wall therefore the distance between the wall and the lower end of the plank is reduced. Knocking the boom upwards from the middle of the cutout reduces the boom length in the same way which effectively pulls the anchor point for the clew of the sail closer to the mast, which reduces the outhaul tension.

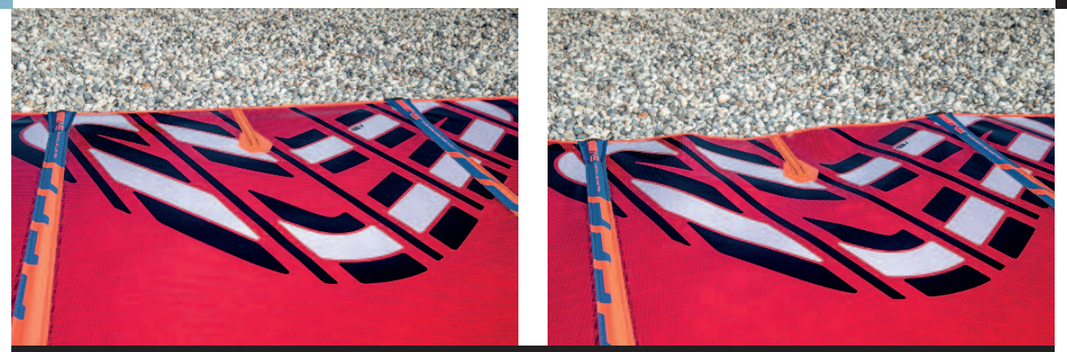
This works in reverse as well: if the regular sized guy (now rested) takes the same rig from the tall lady when she comes in (assuming that she attended to her earlier problem by extending the boom and setting the outhaul correctly) and then knocks the boom back down to the middle of the cutout then he will effectively force the back end of the boom out (like sliding the plank back down the wall). Now he will have so much outhaul tension that even the five finger press might be impossible and this brutally over-outhauled sail will feel as flat and lifeless as Wile E. Coyote on a canyon floor under an Acme anvil… and if your sail is flat like that it will feel horribly twitchy. If you tune your rig in the order above you will never have this problem but, if you do have to raise or lower the boom for any reason after setting the outhaul, you must re-check the outhaul to see if it needs adjusting.

Mastfoot position adjustments

Now that we have our mastfoot on the mark we made on the mast track, we need to consider what circumstances might require us to move it forwards or backwards from this standard position. Well it's a good idea to move the mastfoot forward a centimetre or two when struggling to get going because you are a bit heavier or are guilty of stomping around a bit on the back of the board when learning to get into the footstraps (especially the back one). If you do move it forward then re-connect your rig and lean it over the tail and you will see that the boom is now further forward than your standard setting off the tail. So, to tune everything back to normal, you will now need to put the boom up so it remains on your standard, memorised setting from the tail. And because you have moved the boom up you will need to reset your outhaul.

Moving the mastfoot back can bring the board to life if it feels sluggish at planing speed, especially when you are well powered-up (as too much of the forward part of the board was being forced into the water creating drag). And if you move it back a little then that will require you to lower the boom a little to align it to your standard setting off the tail. And, once again, because you have moved the boom you will need to reset your outhaul.

So, if you move your mastfoot you then need to adjust your boom height and then reset your outhaul. These simple adjustments are easy, take only a few seconds and tune your rig right back to where it needs to be. Failing to make them can de-tune your setup which may impair your technique and, therefore, your ability to succeed and/or progress.



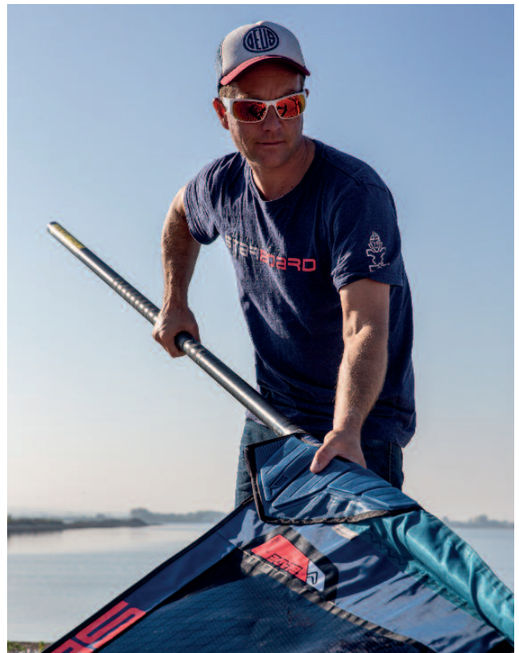
Above: It's all in the detail. Spot the difference between these two photos. One has a loose and reactive leech thanks to correct downhaul whereas the other has a tight and choked leech thanks to too little downhaul

Summary: 10 easy steps to a perfect board and rig setup

After attending to the bits and pieces above, from now on all you have to do is:

1. Adjust extension, sleeve mast into sail, put extension into mast, set downhaul and tidy downhaul away
2. Set boom length and connect to mast roughly at correct height, thread outhaul and tension just a little
3. Position mast foot on board at 130, 135 or 140 (according to board size) and click rig onto mast foot
4. Set final boom height off tail of board to your known position
5. Remove rig from mastfoot
6. Outhaul correctly and do the two or three finger push test. This may need a slight boom length adjustment
7. 'Weigh' boom to position harness lines and set harness line length (covered in next article)
8. Adjust footstrap position and size (covered in next article)
9. Put correctly-sized fin into board (covered in next article)
10. Re-connect rig and board, launch and ride with confidence and focus! There will be no more wobbling away from the beach whilst knocking the boom up a bit only to wonder why your outhaul just went loose. Remember to make small tweaks after the first few runs if you missed out any of the above settings or something does not feel right

So that's all for now. Have fun setting your board and rig up and remember to play around with the settings a bit. By doing this you will learn to feel the key differences that changes can make and this cannot fail to nudge your windsurfing forwards little by little. Come back next time for part two, which will look at the basics of harness line, fin and footstrap set up/tuning.



Simon Winkley is a RYA Advanced Windsurfing Instructor and a RYA Windsurfing Trainer running instructor courses across the UK and overseas

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